

**Notice of Allowability**

Application No.

10/675,732

Examiner

Shawn Gu

Applicant(s)

LUICK, DAVID ARNOLD

Art Unit

2189

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on 8 June 2006 and telephone interview on 15 June 2006.
2. ☒ The allowed claim(s) is/are 1-25, 27-31, 33 and 34.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  
1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.  
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                  |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>20060613</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment  |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                         |
|   | 9. <input type="checkbox"/> Other _____  |

### **EXAMINER'S AMENDMENT**

1. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this Examiner's amendment was given in a telephone interview with Roy Truelson (REG #: 34,265) on 15 June 2006.

2. Amendment in claim 1:  
on line 4, change "a plurality of" to "the".
3. Amendment in claim 12:  
on line 9, change "corresponding tot he" to "corresponding to the".
4. Amendment in claim 15:  
on line 1, change "said pre-defined event" to "said event of said third type".
5. Amendment in claim 24:  
on line 14, change "a plurality of" to "the".
6. Amendment in claim 33:  
on line 7, change "a plurality of" to "the".

### STATEMENT OF REASONS FOR ALLOWANCE

7. The following is an examiner's statement of reasons for allowance:

Per claims 1, 17, 24 and 33, the combined references of Doing et al. [6,161,166], Kedem et al. [6,134,643] and Schumann et al. [6,012,106] teach most of the limitations of the claims as described by in previous Office Action. However the reference history data disclosed by the combined references are not contained in the page table entries, respectively for each of a plurality of cacheable sub-units of the corresponding addressable pages. Instead the reference history data in the combined references is for the entire page as a whole (see Kedem et al., column 3, lines 22-42; and Schumann et al., fig 2, Prefetch Length in 21 Page Table, and column 4, lines 18-63).

Hill et al. [US 6,557,081 B2] (hereinafter "Hill") teaches determining whether to prefetch cacheable sub-units of addressable pages into a cache based on cacheable sub-unit reference history data in a page table (Request Markers 330, see Figs 2-4; see also Col. 3, Ln. 25-46; Col. 4, Ln. 49-57). However, the sub-unit reference history data only correspond to cacheable subunits adjacent to a certain cacheline of a page (see Col. 4, Ln. 58-65; Col. 6, Ln. 36-49; and Fig 4), not to each of the cacheable sub-units of the corresponding addressable page, as stated by claims 1, 17, 24 and 33.

Per claims 11, 27 and 34, the combined references Doing et al., Kedem et al., and Schumann et al. teach every limitation of the claim except that the counter of the combined references is only an up-counter instead of an up-or-down counter (see

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Kedem, Fig 2, Item 55), and there is no second type of event to cause the decrement of the counter.

Hill's Request Markers 330 can be interpreted as a counter, since the flags within the marker are set whenever a request hits within a certain range of the addressable page, and when the number of flags set reaches a threshold, cachelines are prefetched from the external memory to a cache (see Figs 2-4, Col. 4, Ln. 8-34; Col. 4, Ln. 58-65; Col. 5, Ln. 27-37; Col. 6, Ln. 36-49). Although the setting of the flags could be interpreted as incrementing a counter (the Request Marker), Hill only teaches clearing the flags in a Request Marker corresponding to a certain event (see Col. 5, Ln. 44-52), instead of decrementing the counter upon the occurrence of an event respect to data in the memory page corresponding to the counter as specified by claims 11, 27 and 34. Here the term "decrement" is interpreted as "to decrease by a given amount", such as decrementing by one or by some fixed value each time an event of a predetermined type occurs. Hill's clearing of all flags regardless of the current values in the flags does not anticipate decrementing a counter.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

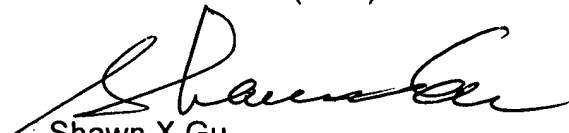
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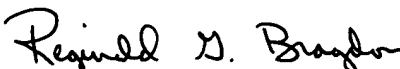
### Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawn Gu whose telephone number is (571) 272-0703. The examiner can normally be reached on 9am-5pm, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon can be reached on (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Shawn X Gu  
Patent Examiner  
Art Unit 2189

  
REGINALD G. BRAGDON  
PRIMARY EXAMINER

15 June 2006